

# Identifying potential use of emerging neighbourhood mobility hubs using behavioural modelling



Image retrieved from CoMoUK (2019)



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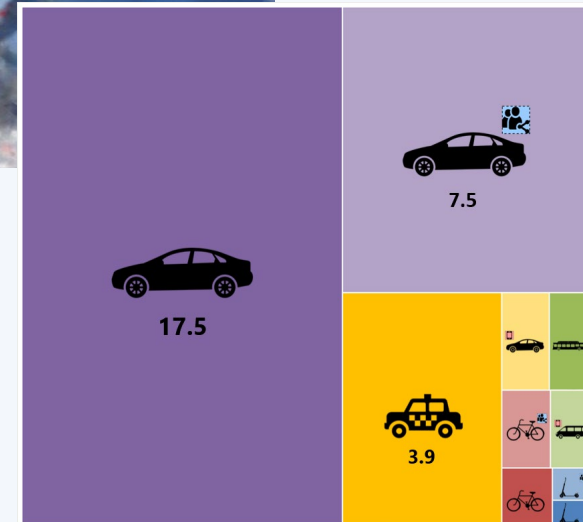
# Introduction

- Car ownership and use:
  - Emissions
  - Unsafety
  - Space



Sustainable solutions are needed

Mobility hubs offer a solution?



Stam et al. (2021). [Travellers' preferences towards existing and emerging means of first/last mile transport: a case study for the Almere centrum railway station in the Netherlands](#). Eur. Transp. Res. Rev. 13, 56.

# What is a hub?



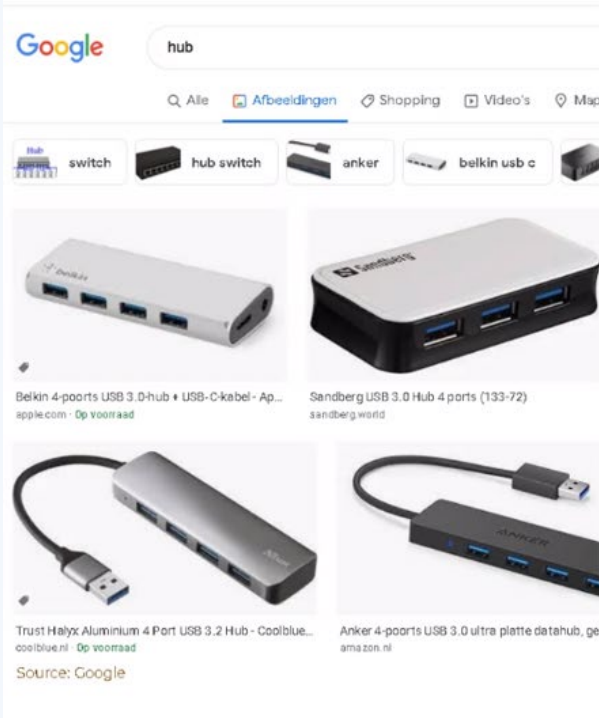
WIKIPEDIA  
De vrije encyclopedie

## Hub

Hub of HUB kan verwijzen naar:

- **Hub (Windows Phone)**, een applicatie voor het Windows Phone 7-besturingssysteem
- **Hub (hardware)**, een apparaat in een computernetwerk
- **Hub (telecommunicatie)**, een knooppunt in WAN-datanetwerken, zoals in een *hub-spoke* opzet
- **Hub (luchthaven)**, een luchthaven waar men overstapt op andere vluchten
- **Hubrecht (voornaam)**, een jongensnaam
- **The Hub**, een fictieve plek in de Amerikaanse televisieserie *That '70s Show*
- **HUB Uitgevers**, een uitgeverij van voornamelijk IT-gerelateerde tijdschriften
- **Naaf**, een machine- of fietsonderdeel
- **Station Hunmanby**, stationscode van dit Engels station
- **Hogeschool-Universiteit Brussel**, een voormalig Brussels samenwerkingsverband voor hoger
- **The Hub (televisiezender)**, een Amerikaans televisiezender
- **Hub (striptekenaar)**, Franse striptekenaar

Source: Wikipedia



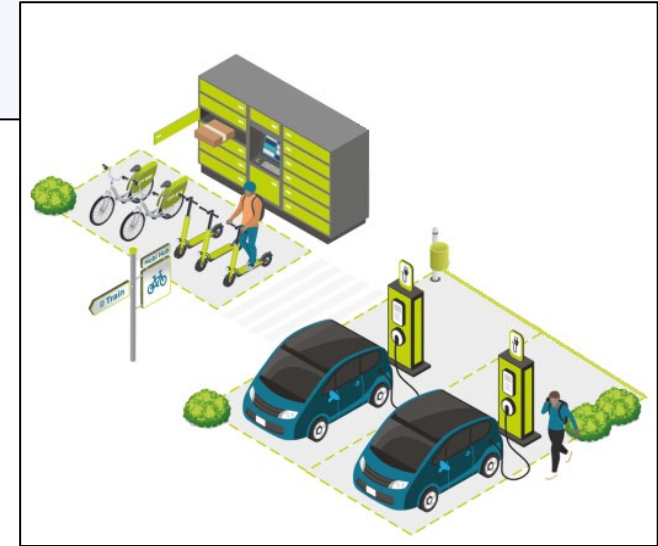
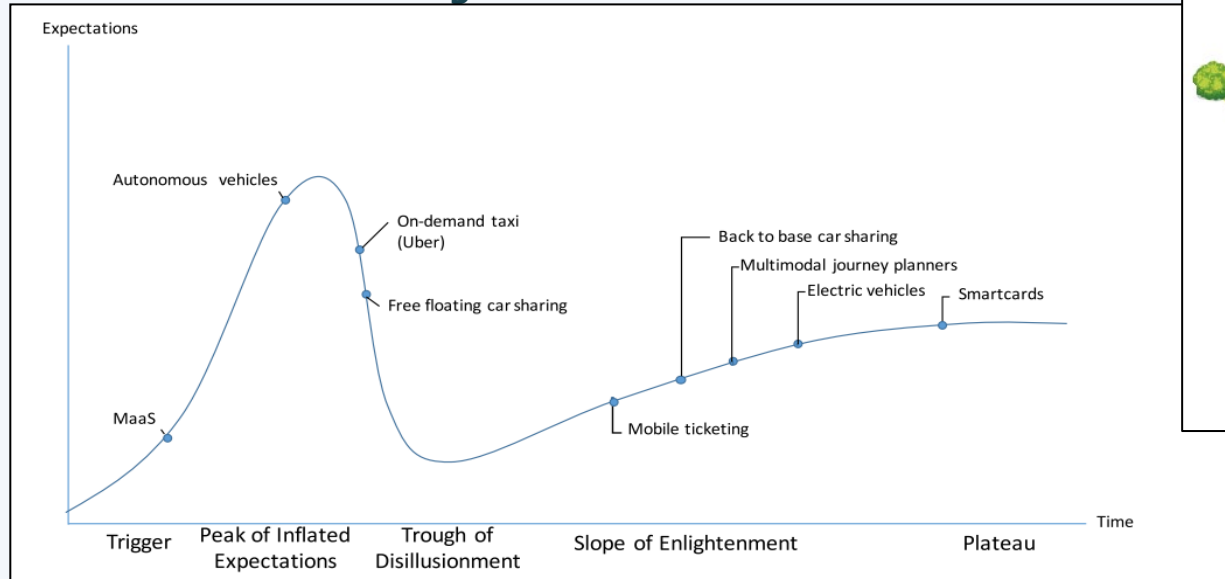


- **Physical location** where different **shared transport** options are offered at permanent and well-visible locations which are available at **walking distance from home**



# Promise?

- “Parking place” for **sustainable transport** and **an enrichment for public space**
- Potential to **reduce car dependency** and reduction of **negative externalities**



**Which user groups can be identified in adopting mobility services offered by neighborhood mobility hubs?**

# Half full or half empty?





Literature review

Conceptual model (UTAUT2 model)

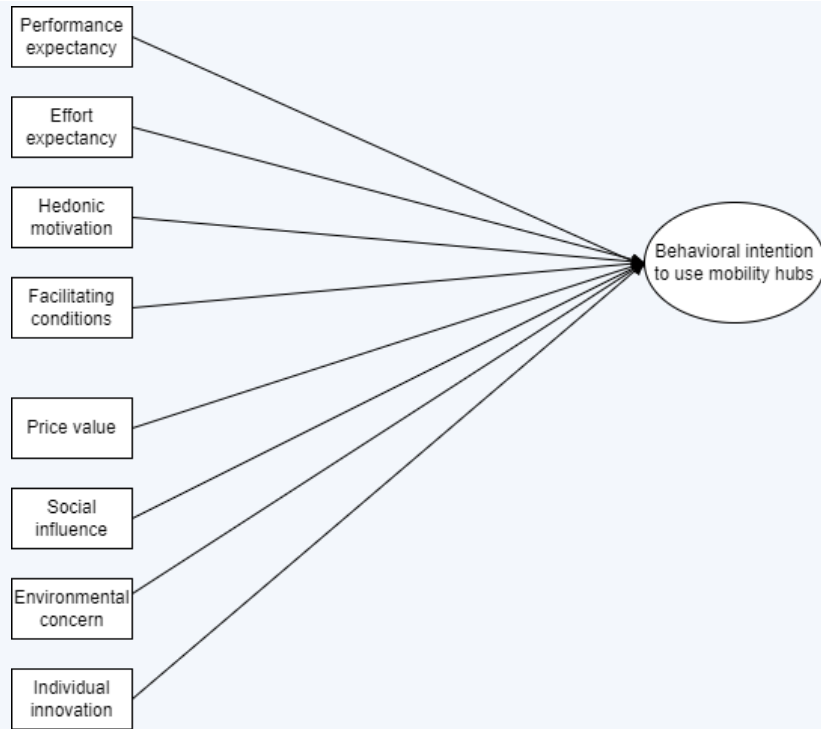
Survey

Exploratory Factor Analysis

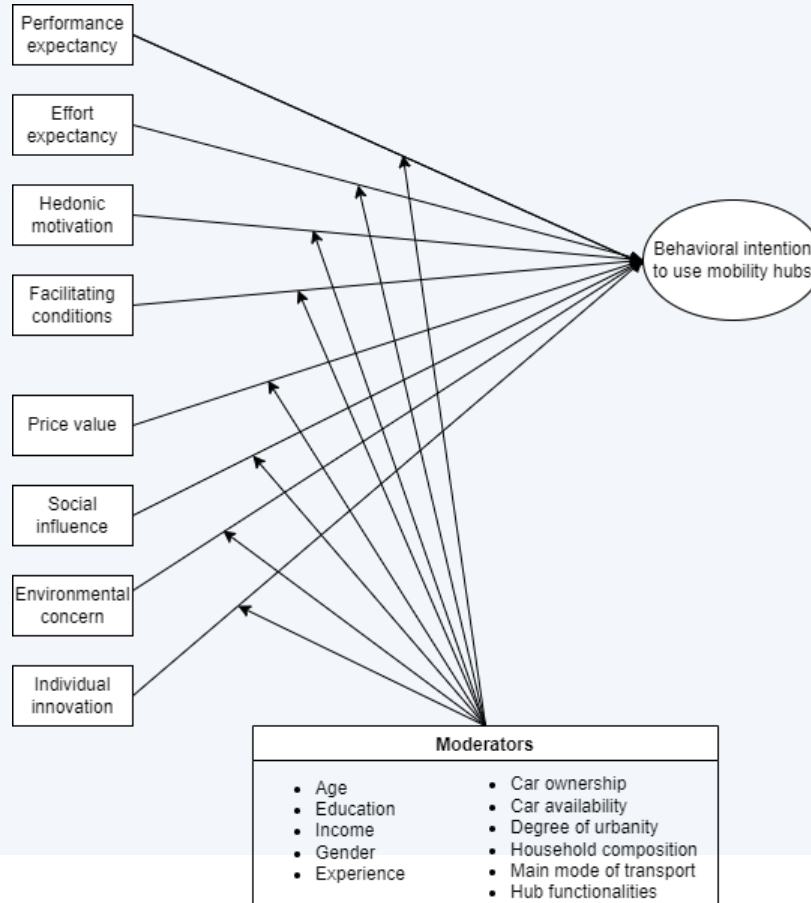
Latent Class Cluster Analysis



# Conceptual model



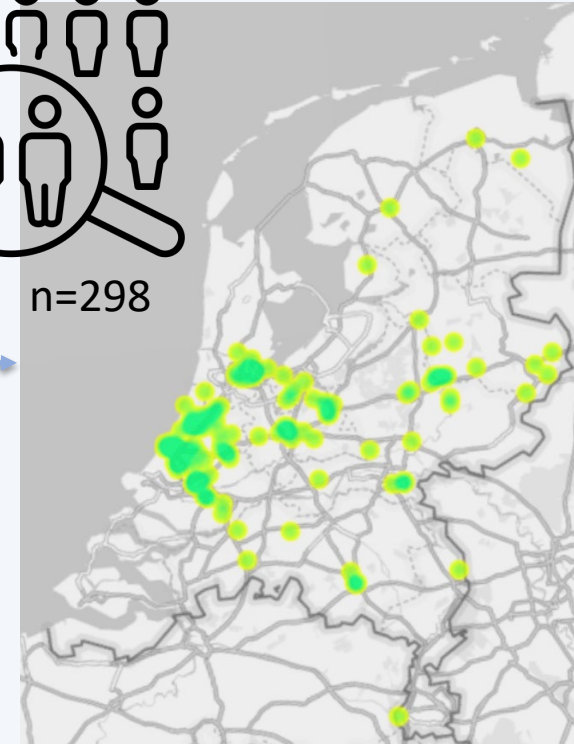
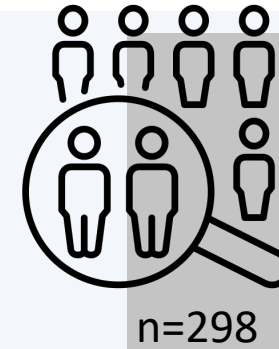
# Conceptual model



# Survey

## Questionnaire - representation

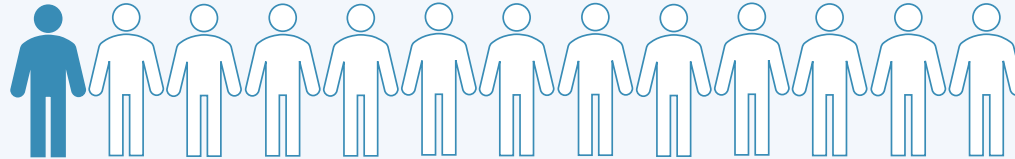
- Not fully representative compared to the Dutch population
  - Higher percentage of men
  - Higher percentage of young people (<35 years old)
  - Higher incomes
  - Higher education level
  - Higher percentage of people living in urban environments
- The target group of shared mobility users are mainly **young, highly educated people living in urban environments**
- Might lead to **overestimation** of the results



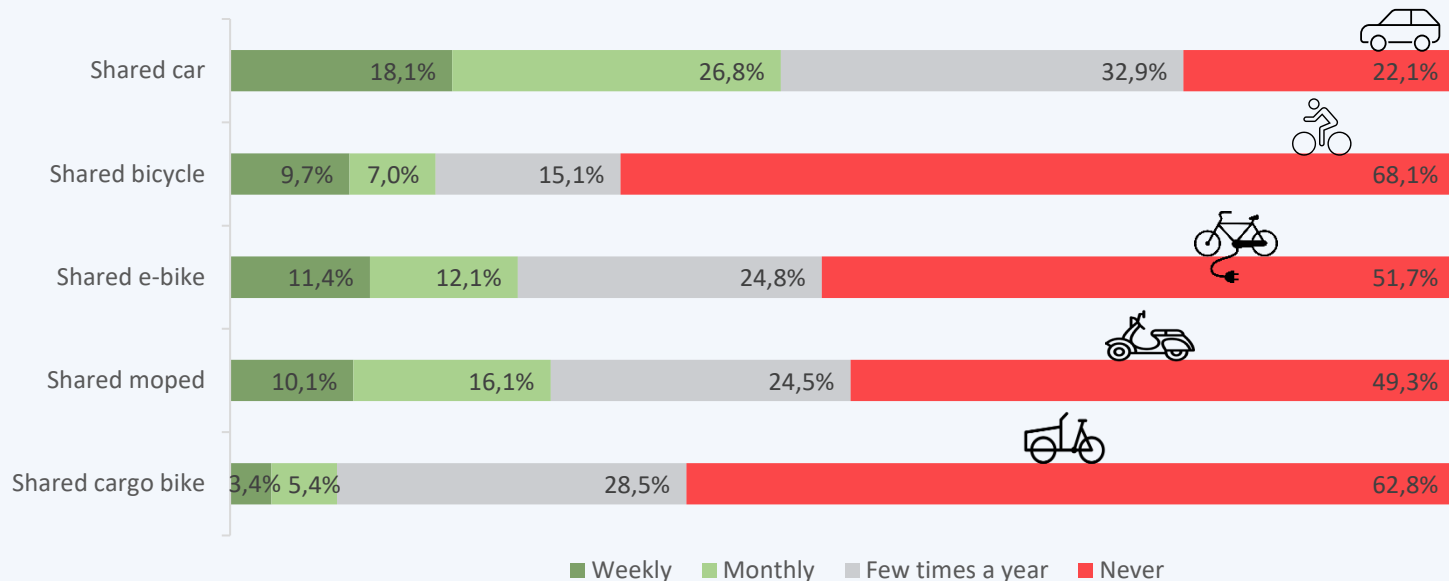


# Results

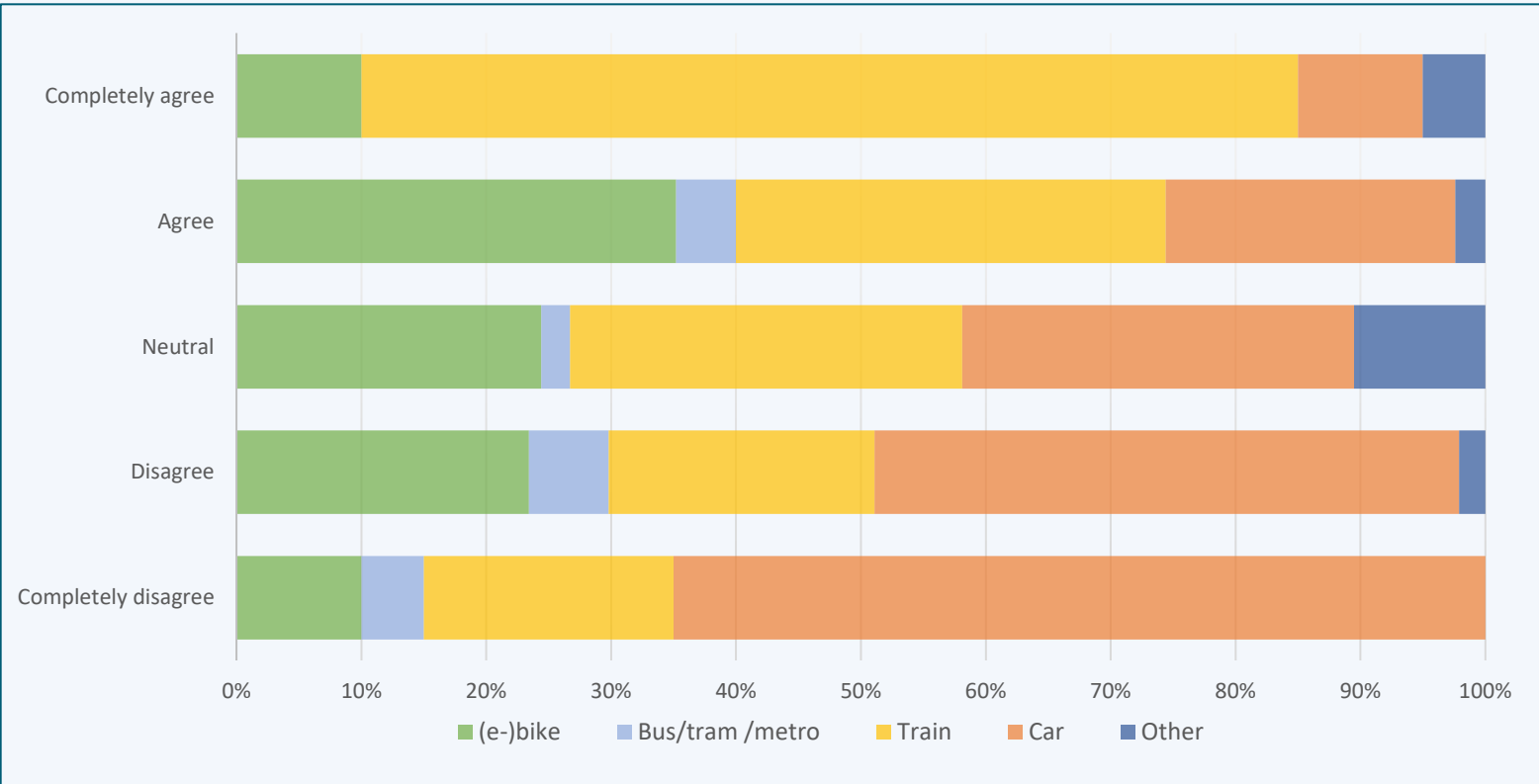
- 49% of the sample intends to use mobility hubs when it would be available in their neighborhood
- Higher percentage if walking time is specified to **5 minutes**
- Impact of a mobility hub on car usage and car ownership is lower:
  - 1 in 5 people indicate that they would use their car less
  - 1 in 7 people indicate that they would sell their second (or third) owned car
  - 1 in 13 people indicate that they would sell their only owned car



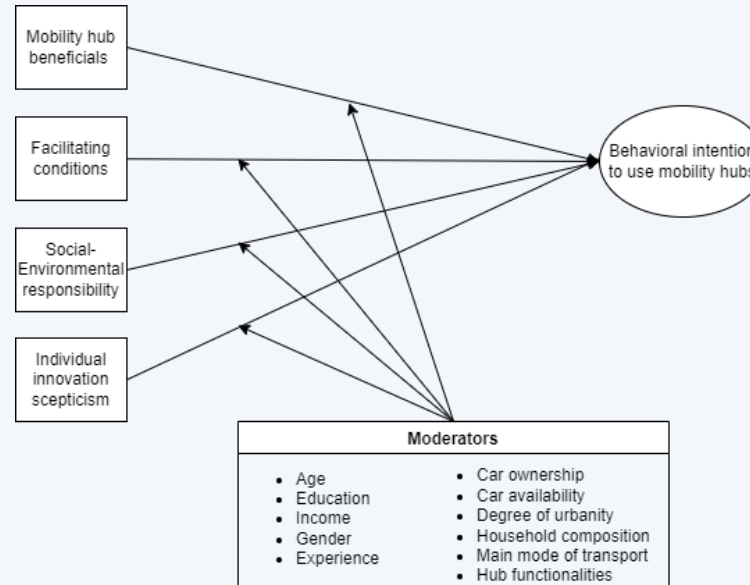
# Preferred mode of transport at mobility hub



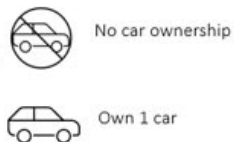
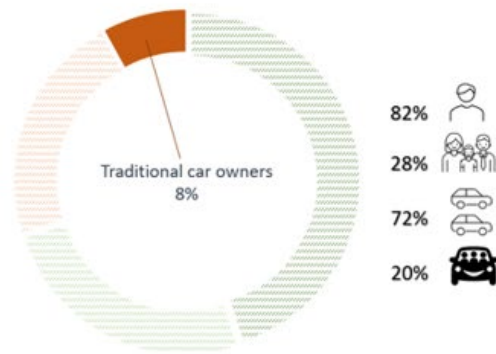
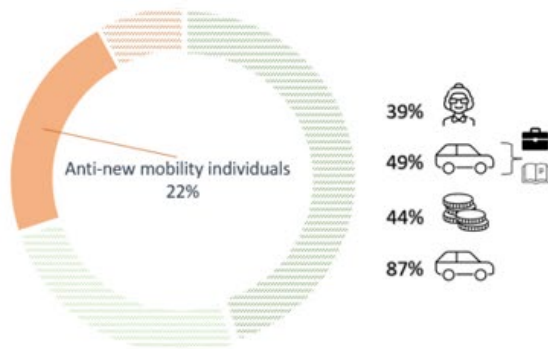
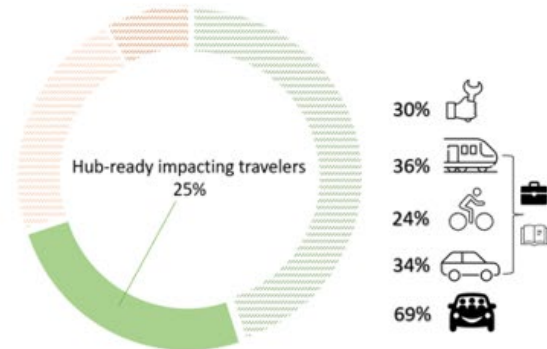
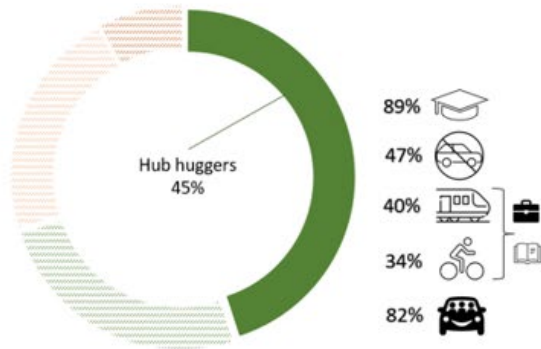
# Relation between current transport modes and intention



- Probabilistic clustering technique
- Forms homogeneous groups in sample based on indicator scores and user characteristics

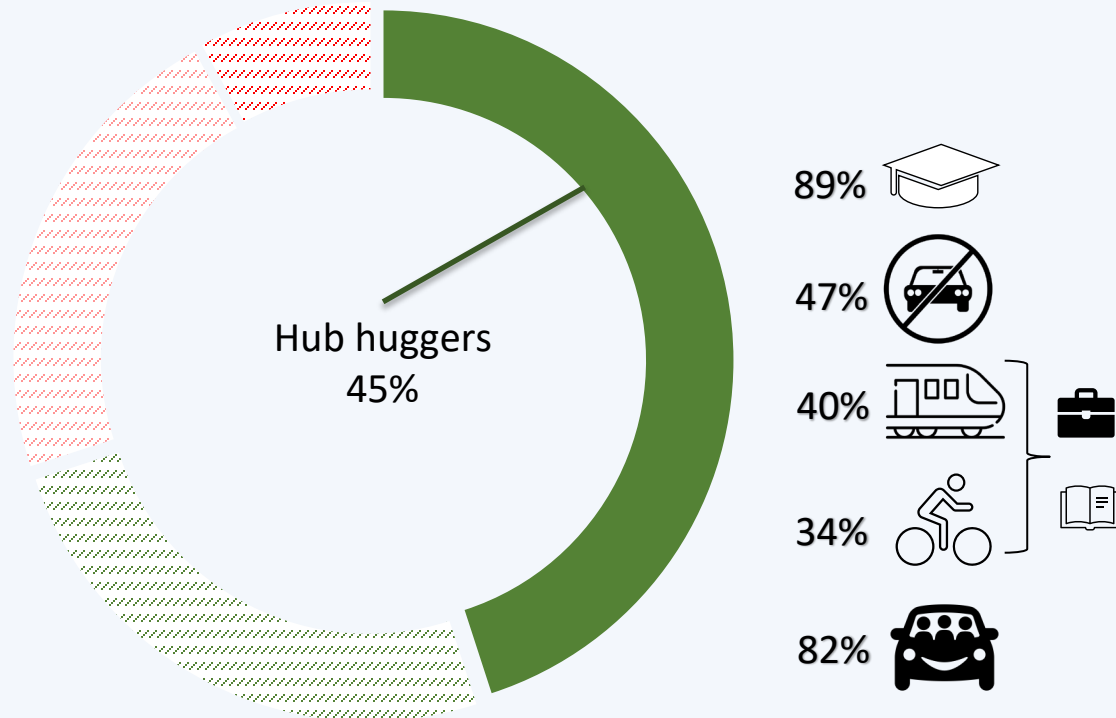






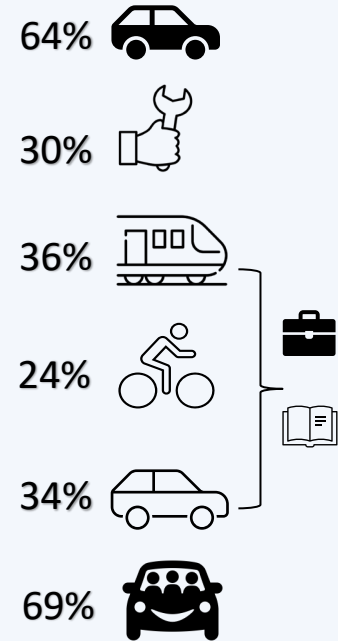
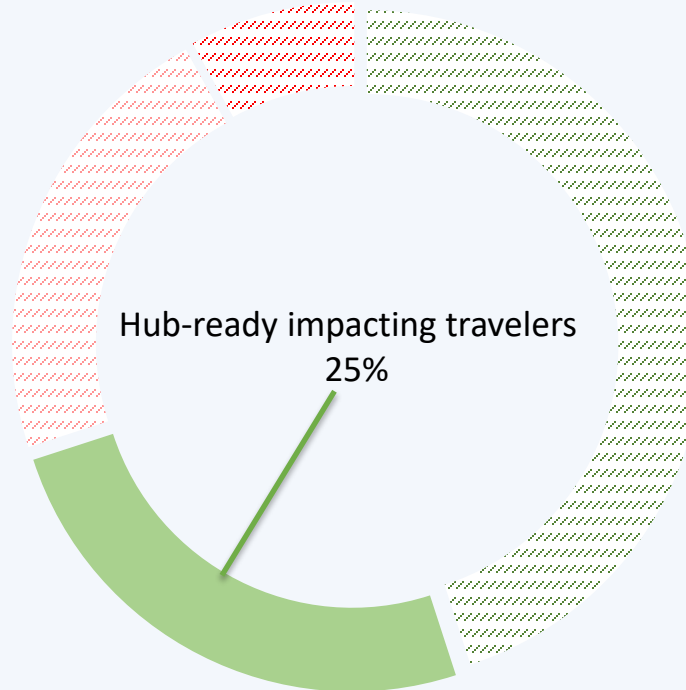
# Cluster 1: Hub huggers

- 25% expects to reduce car usage
- 17% expects to sell 2<sup>nd</sup> (or 3<sup>th</sup>) car
- 9% expects to sell their only car



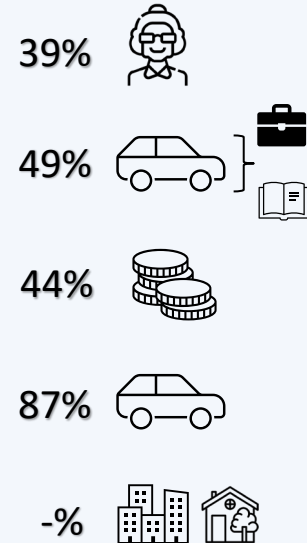
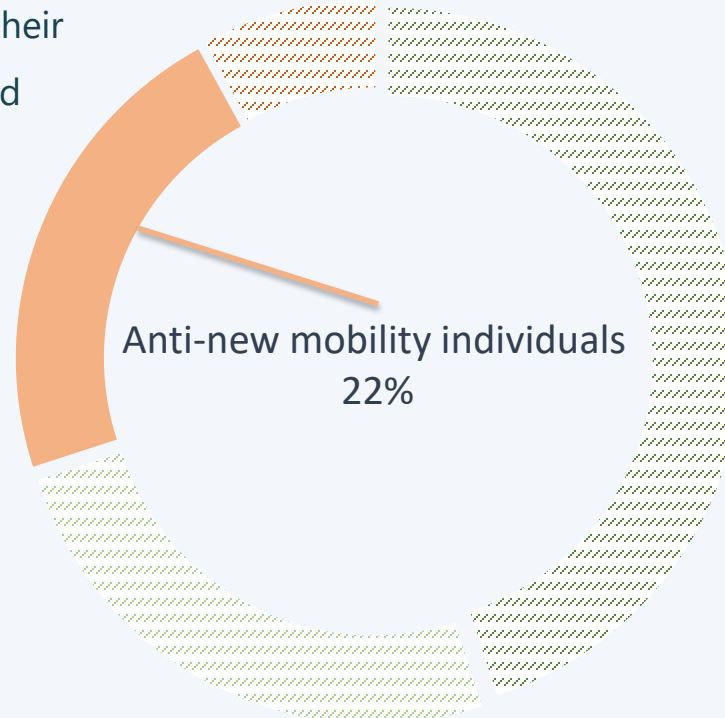
# Cluster 2: Hub-ready impacting travelers

- 29% expects to reduce car usage
- 20% expects to sell 2<sup>nd</sup> (or 3<sup>th</sup>) car
- 11% expects to sell their only car
- **Biggest impact** of all clusters on car ownership and usage



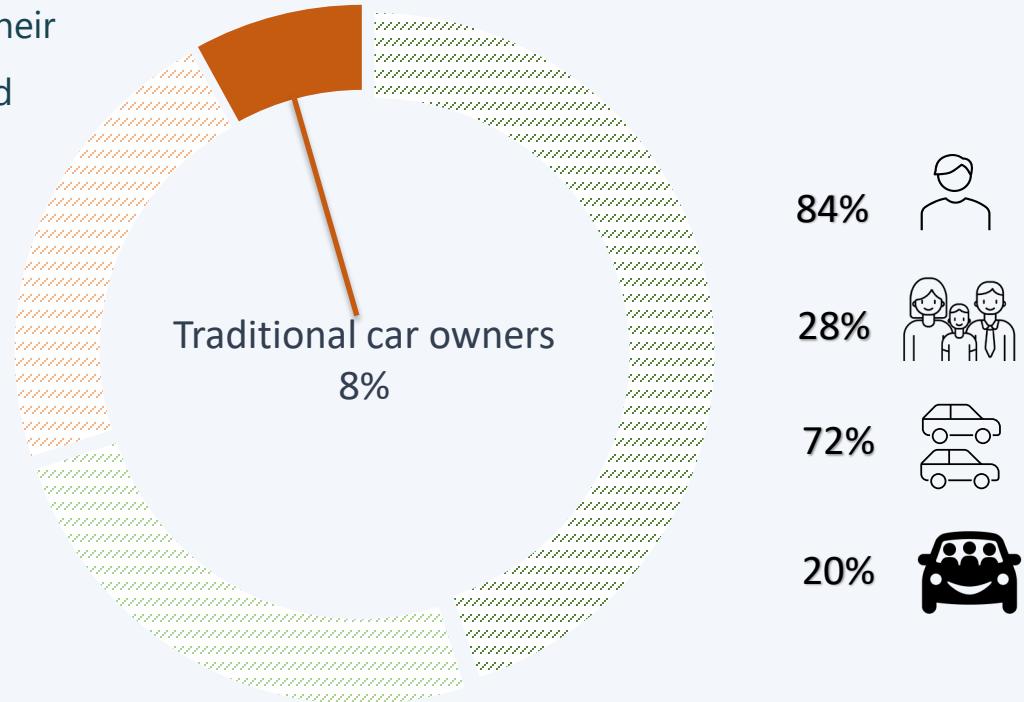
# Cluster 3: Anti-new mobility individuals

- 64% indicates that they will **not** use their car less when a hub will be introduced
- 12% expects to reduce car usage
- 9% expects to sell 2<sup>nd</sup> (or 3<sup>th</sup>) car
- 6% expects to sell their only car



# Cluster 4: Traditional car owners

- 71% indicates that they will **not** use their car less when a hub will be introduced
- 9% expects to reduce car usage
- 4% expects to sell 2<sup>nd</sup> (or 3<sup>th</sup>) car
- **0%** expects to sell their only car





# Conclusion and discussion

## **“Which user groups can be identified in adopting mobility offered by neighborhood mobility hubs?”**

- 4 different user clusters
  - Hubs are promising for hub huggers and hub-ready impacting travelers
- Four indicators w.r.t. behavioral intention:
  - Mobility hub beneficiaries
  - Social-environmental responsibility
  - Individual innovation scepticism
  - Facilitating conditions

# Conclusion (2/2)

- Important determinants for potential hub usage:
  - Cyclists and train passengers are more likely to use hubs in the future
  - Prior experience with shared transport is a plus
  - No car ownership
  - Mainly younger of age, high educated and high degree of urbanity
- **Depends on cluster!**

- Representation of sample
- Stated preference vs revealed preference
  - Measuring intention to use instead of actual usage



# More about mobility hubs and user intentions?

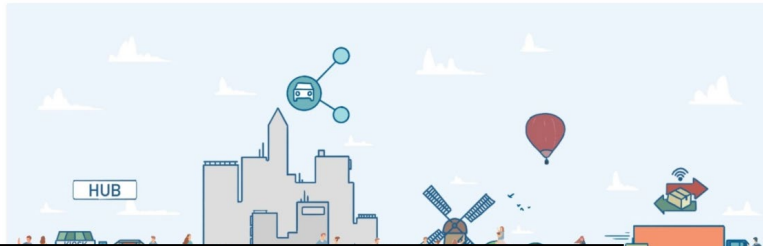


Zoeken

Home Mijnetwerk Vacatures Berichten Meldingen Ik Werk Probeer Premium

## Google, wat is een hub?

Gepubliceerd op 2 december 2021 Artikel bewerken Statistieken weergeven

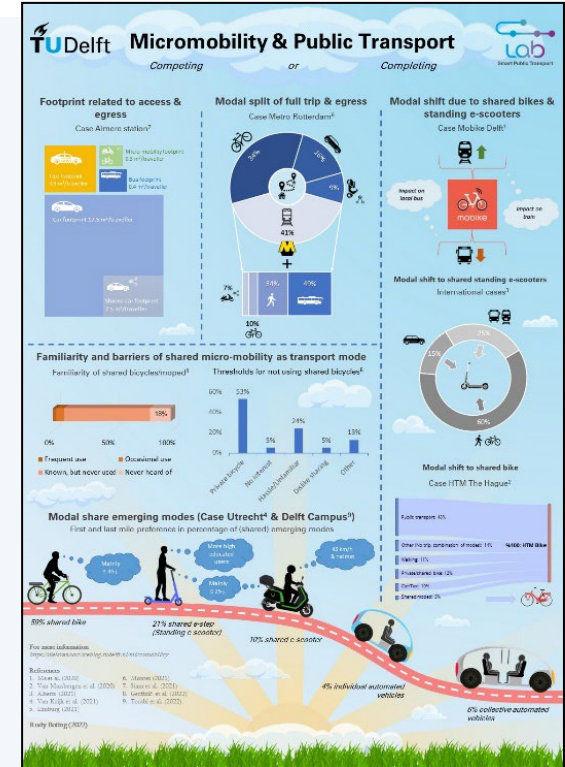


MOBILITY INNOVATORS  
PODCAST



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